

INTRODUCTION

The Collaborative Effort, a 27-member group¹ representing varied interests of the corridor, was charged with reaching consensus on a recommended transportation solution for the I-70 Mountain Corridor². The Colorado Department of Transportation (CDOT) and the Federal Highway Administration (FHWA) were active participants in this group and committed to adopt the consensus recommendation in the I-70 Programmatic Environmental Impact Statement (PEIS).

VISION FOR THE I-70 MOUNTAIN CORRIDOR

The Collaborative Effort's vision for transportation in the I-70 Mountain Corridor is multi-modal. Transit and highway improvements are based on proven needs and will enhance the corridor, its environment and communities. The Collaborative Effort has not completed a corridor-wide vision for the future, thereby limiting the ability of the group to accurately determine future actions and needs. In order to adequately assess future transportation needs, local governments and communities, along with additional broad stakeholder participation, need to lead a discussion to develop a long-range corridor vision for growth, transportation, and mobility. One primary purpose of this endeavor would be used to assist in the evaluation of capacity improvements. All parties must take ownership in needed changes and continue to work together to achieve this vision.

The criteria below informed the Collaborative Effort's recommendation and will serve as criteria of effectiveness moving forward:

- The solution should improve safety and mobility for all users.
- The solution should be responsive and adaptive to broader global trends that will affect the way we make travel decisions into the future.
- The solution will meet the purpose and need and all environmental and legal requirements.
- The solution should preserve, restore and enhance community and cultural resources.
- The solution should preserve, and restore or enhance ecosystem functions.
- The solution should be economically viable over the long term.

The Collaborative Effort's solution recognizes the importance of providing meaningful recommendations, short-term direction, and the ability to adapt to future conditions and needs. The Collaborative Effort has not analyzed the potential environmental impacts of this recommendation. A comparative analysis must be made of the impacts of this alternative against all other alternatives identified in the Draft Programmatic Environmental Impact Statement. The CE understands that the agencies will make this comparison as required by the National Environmental Policy Act. As soon as this analysis is complete and prior to publication in the Final Programmatic EIS the agencies shall provide a briefing to interested members of the CE of the results of this analysis.

The recommendation below captures the consensus of the Collaborative Effort.

RECOMMENDATION

The recommendation for I-70 through Colorado's mountain corridor is a multi-modal solution including non-infrastructure components, a commitment to evaluation and implementation of an Advanced Guideway System (AGS), and highway improvements. A reassessment of the improvements' effectiveness and reviews of study results and global trends shall be conducted prior to implementing additional capacity improvements. Continued stakeholder involvement is necessary for all tasks conducted on the I-70 transportation system.

¹ See Attachment A for a list of Collaborative Effort representatives and organizations.

² The I-70 Mountain Corridor as defined by the study boundaries identified in the PEIS.

The following describes the components of this recommendation:

Non-Infrastructure Related Components

Non-infrastructure related components can begin in advance of major infrastructure improvements to address some of the issues in the corridor today. These strategies and the potential tactics for implementation require actions and leadership by agencies, municipalities and other stakeholders beyond CDOT and FHWA. The strategies include but are not limited to the following:

- Increased enforcement.
- Bus, van or shuttle service in mixed traffic.
- Programs for improving truck movements.
- Driver education.
- Expanded use of existing transportation infrastructure in and adjacent to the corridor.
- Use of technology advancements and improvements which may increase mobility without additional infrastructure.
- Traveler information and other intelligent transportation systems.
- Shift passenger and freight travel demand by time-of-day and day-of-week.
- Convert day-trips to overnight stays.
- Promote high occupancy travel and public transportation.
- Convert single occupancy vehicle commuters to high occupancy travel and/or public transportation.
- Implement transit promotion and incentives.
- Other transportation demand management (TDM) measures yet to be determined.

Advanced Guideway System

An Advanced Guideway System (AGS)³ is a central part of the recommendation and includes a commitment to the evaluation and implementation of AGS within the corridor, including a vision of transit connectivity beyond the study area and local accessibility to such a system.

Additional information is necessary to advance implementation of an AGS system within the corridor:

- Feasibility of high speed rail passenger service.
- Potential station locations and local land use considerations.
- Transit governance authority.
- Alignment.
- Technology.
- Termini.
- Funding requirements and sources.
- Transit ridership.
- Potential system owner/operator.
- Interface with existing and future transit systems.
- Role of AGS in freight delivery both in and through the corridor.

Several studies currently underway will provide further information to assist stakeholders with evaluation and implementation of AGS.

³ As defined by the performance criteria identified by the I-70 Coalition (Attachment B).

CDOT is committed to provide funding for studies in support of the additional information needs to determine the viability of the AGS. The implementation plan included in the Final Programmatic Environmental Impact Statement will identify roles and responsibilities, including actions and leadership required by agencies, municipalities and other stakeholders in addition to CDOT and FHWA.

Highway Improvements

The Collaborative Effort recognizes that the following highway improvements are needed to address current corridor conditions and future demands. These improvements must be planned considering all elements of the recommendation and consistent with local land use planning. The following safety, mobility, and capacity components are not listed in order of priority, do not represent individual projects and may be included in more than one description⁴. They are listed in two categories. All of the improvements in both categories are included in our recommendation. The “Specific Highway Improvements” are called out specifically for the triggers for the Future Highway and Non-AGS Transit Improvements:

Specific Highway Improvements

- A six-lane component from Floyd Hill through the Twin Tunnels including a bike trail and frontage roads from Idaho Springs East to Hidden Valley and Hidden Valley to US 6.
- Empire Junction (U.S. 40/I-70) improvements.
- Eastbound auxiliary lane from the Eisenhower Johnson Memorial Tunnel (EJMT) to Herman Gulch.
- Westbound auxiliary lane from Bakerville to the EJMT.

Other Highway Projects

The following safety and mobility components are not subject to the parameters established for future capacity improvements identified in the latter part of this document.

- Truck operation improvements such as pullouts, parking and chain stations.
- Safety improvements west of Wolcott.
- Eastbound auxiliary lane from Frisco to Silverthorne.
- Safety and capacity improvements in Dowd Canyon.
- Interchange improvements at the following locations:
 - East Glenwood Springs.
 - Gypsum.
 - Eagle County Airport (as cleared by the FONSI and future 1601 process)
 - Eagle.
 - Edwards.
 - Avon.
 - Minturn.
 - Vail West.
 - Copper Mountain.
 - Frisco/Main Street.
 - Frisco/SH 9.
 - Silverthorne.
 - Loveland Pass.
 - Georgetown.

⁴ See Attachment C for a detailed description of safety improvement, interchange and auxiliary lane projects.

- Downieville.
- Fall River Road.
- Hyland Hills and Beaver Brook.
- Lookout Mountain.
- Morrison.
- Auxiliary Lanes:
 - Avon to Post Boulevard (eastbound).
 - West of Vail Pass (eastbound and westbound).
 - Morrison to Chief Hosa (westbound).

Future Stakeholder Engagement

Ongoing stakeholder engagement is necessary because the aforementioned improvements may or may not fully address the needs of the corridor beyond 2025, and the recommendation does not preclude nor commit to the additional multi-modal capacity improvements. As such, CDOT and FHWA will convene a committee that retains the Collaborative Effort member profile. The committee will establish its own meeting schedule based on progress made against the approved triggers, with check-ins at least every two years. Such meetings will review the current status of all projects and will consider the following triggers in evaluating the need for additional capacity improvements.

Triggers for Additional Highway and Non-AGS Transit Capacity Improvements

Additional highway and non-AGS transit capacity improvements may proceed if and when:

- The “Specific Highway Improvements” are complete, and an AGS is functioning from the front range to a destination beyond the Continental Divide, or
- The “Specific Highway Improvements” are complete, and AGS studies that answer questions regarding the feasibility, cost, ridership, governance, and land use are complete and indicate that AGS cannot be funded or implemented by 2025 or is otherwise deemed unfeasible to implement, or
- Global, regional, or local trends or events have unexpected effects on travel needs, behaviors and patterns and demonstrate a need to consider other improvements, such as climate change, resource availability, and/or technological advancements.

In 2020, there will be a thorough assessment of the overall purpose and need and effectiveness of implementation of these decisions. At that time, CDOT and FHWA, in conjunction with the stakeholder committee, may consider the full range of improvement options.

The CE recommends that the Record of Decision for the PEIS require that Tier 2 studies comply with:

- The Section 106 Programmatic Agreement,
- The Memoranda of Understanding for:
 - Stream Wetland Ecology Enhancement Project (SWEEP),
 - Minewaste, and
 - A Landscape-level Inventory of Valued Ecosystem Components (ALIVE),, and
- The Context Sensitive Solutions (CSS) decision making process and guidance manual.

CDOT and FHWA also will consider the principles of the Colorado Governor Ritter’s Climate Action Plan within future environmental studies.

Attachment A: Collaborative Effort Representatives and Organizations

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Attachment B: AGS Technology Performance Criteria
I-70 Coalition Technical Committee Recommendations

The I-70 Coalition requested that its Technical Committee develop a list of performance criteria that could be useful in the effort to screen potential Advanced Guideway System technologies, both existing in research and development phase technologies. These criteria are not meant to be a detailed, specific and definitive list, but merely a basic screening tool for general purposes of the Coalition and its partners.

CRITERIA:

NOISE – This criterion has two separate factors to consider, both external (system) noise and internal (cabin noise) should be considered as important factors for consideration.

External – should be less than existing highway noise levels.

Internal – ability to hold a conversation without raising one's voice (current research indicates this is approximately decibel levels of about 50 db).

ELEVATED – The intent is for the AGS to be capable of being elevated for more than just for short spans like bridges, in an effort to avoid environmental (especially wildlife) impacts and to minimize the footprint of the system. Pre-fab structures for cost containment and deployment, as well as those constructed in sections offsite using steel and/or concrete should be considered. Design must follow context sensitive solutions guidelines to accommodate local community desires and needs.

WEIGHT – This criterion refers to a minimum/maximum freight carrying capacity (consumer freight) and also anticipates average per passenger as well as freight only capacity. The discussion regarding freight capacity is included in slightly more detail below. The basic guideline is for the AGS to accommodate passengers, luggage (and recreational paraphernalia) as well as some measure of containerized or consumer freight.

TRAVEL TIME – This category also has two components to consider since the intent is for AGS to accommodate both local and express traffic simultaneously. This implies a need for off-line stations since it would not be feasible to allow for both local and express traffic on a single line with on-line stations.

Express – as least as fast as unimpeded vehicle on highway between Denver and Vail (speeds likely approaching greater than 65 mph)

Local – as least as fast as unimpeded vehicle on highway (including station dwell time), equivalent of local transit now (Summit Stage, Eco-Transit, etc.) between local locations (i.e. Silverthorne to Copper Mountain). This implies that the speed of AGS would need to exceed 65 mph if station dwell time is going to be incorporated in transit time.

GRADE – AGS must accommodate demand between Denver and Glenwood Springs without significant degradation of speed and efficiency. That may mean ability to climb grades of 7% or greater over long stretches (10 miles or more) without significant decrease in speed.

SAFETY – This is a critical factor which includes both passenger safety (which has implications for g-forces for acceleration and deceleration, lateral stability and smoothness of ride) as well as safety for traffic/pedestrian crossings and potential wildlife crossings. Elevation of AGS should accommodate grade separated crossings and alleviate wildlife crossing concerns.

WEATHER – AGS should be capable of operating in all weather conditions and accommodate severe weather events with minimal interruption or delays in service. This includes tolerances for extremes of heat, cold, wind, ice.

WIND – Technology and network must be able to withstand windshear in excess of extreme alpine wind storms such as those frequently experienced at Georgetown and throughout the corridor.

SALABILITY – Expansion of alignments and carrying capacity (within hours) should be able to address both growth in demand over time as well as peak demand vs off-peak demand. This criterion will have vehicle design ramifications as well as storage requirements for the system.

PASSENGER COMFORT AND SAFETY – While not “scientific” and quantifiable, the following observations are important factors to consider in evaluation of any technology on the I-70 corridor:

- Ability to have a cup of coffee on board without concern for spilling it.
- Work on laptop
- Ride comfort – ability to move around without being slammed against a wall
- Acceleration
- Restroom capable
- Seating for all passengers
- ADA compliant

BAGGAGE CAPACITY – For most riders, there will be a need to accommodate gear, luggage, outdoor gear, “stuff.” Loading of such accoutrements must have minimal impact on station dwell and boarding times. In general, the intent is to be able to carry anything one could carry in or on a passenger vehicle.

LIGHT FREIGHT – commercial freight during off hours (Consumer Freight). This criterion is still being discussed, but the intent is to accommodate UPS/FedEx type of freight as well as restaurant and lodging types of commodities.

ENERGY EFFICIENCY – Technology should be capable of incorporating green technology for power sources such as wind and solar power. Ideally it should accommodate such power sources on-line.

GROWTH – ability to accommodate 50 years of growth in demand.

ACCOMMODATE LOCAL AND EXPRESS TRAFFIC SIMULTANEOUSLY

TUNNELS – if needed, the technology should minimize the need for tunneling as an expensive alternative to other routes. However, there is a recognition that in certain circumstances, tunneling may be a viable option and even desirable to mitigate other factors.

ADAPTABILITY – the system should be able to incorporate or evolve to future technological developments without scrapping the entire system.

RELIABILITY – consistent, predictable travel times in all weather conditions is a mandatory feature of any AGS proposed for the I-70 Corridor.

FREQUENCY – head-way times capable of addressing peak period demands is a necessity for this system.

ALIGNMENT – the system should not be limited to the current CDOT I-70 highway R.O.W. if a more efficient, more direct, more reliable and potentially less expensive alignment is possible. The AGS alignment should optimize rider ship potential and minimize environmental impacts to both the corridor's natural and built environments, including impact to corridor communities and the current highway operation. In addition, alignment location considerations should include minimizing the impact to the current I-70 highway operation during the construction of the AGS.\

OPERATIONAL EFFICIENCIES AND LOW MAINTENANCE COSTS

EQUIPMENT DESIGN FLEXIBILITY – the system should be able to accommodate multiple needs for passengers, freight, passenger "stuff," possibly even cars (based on European models). It should allow for private entities (UPS) to build specific needs vehicles (proprietary) to meet very specialized cargo needs. This may include a need for different vehicle configurations to accommodate low demand travel times and locations as well as the high demand, peak travel times and destinations.

CONTEXT SENSITIVE SOLUTIONS – CSS principles will apply for environmental and community considerations in construction and operations in all locations, the development of transit stations of all designs and for all types of technologies.

Attachment C: Safety Improvement, Interchange and Auxiliary Lane Project Descriptions

Interchanges

COMPONENT	BENEFIT
East Glenwood Springs (milepost 116): Interchange improvements would constitute the westernmost local safety and capacity improvement.	Improvements to the East Glenwood Springs Interchange would involve upgrades to all existing ramps, including widening and lengthening, and signalization of the interchanges on SH 82 at the bottom of the I-70 ramps.
Gypsum (milepost 140): Extensive development in western Eagle County is expected to result in excess travel demand at this currently unsignalized interchange.	This improvement also would provide more storage to prevent traffic from backing up onto the I-70 mainline.
Eagle County Airport (milepost 143): As cleared by the FONSI and future 1601 process, the interchange will include a new I-70 interchange and exit between the Towns of Eagle and Gypsum, and a new 4-lane bridge and roadway connecting to Cooley Mesa Road at the east end of the airport.	This improvement will provide a more direct connection between I-70 and the Eagle County Regional Airport, located south of State Highway 6 (SH 6) between the towns of Eagle and Gypsum.
Eagle (milepost 147): As with the Gypsum interchange, this interchange is expected to see demands increasing with local development.	Improvements would reconstruct the interchange and increase the capacity of the spur road that connects I-70 and US 6.
Edwards (milepost 163): Continued development in Edwards would result in increased congestion at this interchange.	Improvements would reconstruct the interchange and increase the capacity of the spur road that connects I-70 and US 6.
Avon (milepost 167): The westbound off-ramp at Avon is anticipated to have traffic backing up onto the I-70 mainline in the future.	The Avon interchange would be modified to create more capacity for this movement.
Minturn (milepost 171): The Minturn interchange is a partial-cloverleaf on a mainline curve. Tight ramp loops and the curves in the mainline contribute to a substantial accident rate. The eastbound off-ramp also has safety issues resulting from a single approach lane for both the through traffic to Minturn and the traffic turning right to go to Vail.	A separate right turn lane for the eastbound on-ramp traffic would be provided, along with other minor reconstruction elements to improve safety and capacity.
Vail West (milepost 173): The roundabouts at Vail West Entrance carry heavy volumes of both local and regional traffic. As a result, traffic currently backs up onto eastbound I-70. The improvement would primarily involve construction of the "Simba Run" underpass, which would connect the north and south frontage roads between Vail West Entrance and Vail Main Entrance (milepost 176).	This component would relieve local traffic pressures on the interchange roundabouts and would lengthen an inadequate eastbound on-ramp acceleration lane.
Copper Mountain (milepost 195): Unusual geometry and grades contribute to a greater-than-average accident rate at this interchange.	This local improvement would modify this interchange – also known as Wheeler Junction – to provide greater safety and capacity.

Frisco/Main Street (milepost 201): Without this improvement, off-ramp traffic at Main Street on the west side of Frisco is expected to back onto the I-70 mainline during peak hours.	This component would replace the current stop signs with traffic signals and provide appropriate turn bays.
Frisco/SH9 (milepost 203): This improvement would provide a two-lane eastbound on-ramp and acceleration lane up to near the scenic overlook (milepost 202.5 to 203).	This would allow southbound traffic on SH 9 to use both lanes throughout the town of Frisco, which would help reduce or eliminate queuing at the multiple traffic signals. It would also increase westbound off-ramp ramp storage.
Silverthorne (milepost 205): The interchange with US 6 and SH 9 near Dillon and Silverthorne currently experiences congestion and many accidents on the intersecting highways.	Rebuilding the interchange – likely as a single point urban interchange (SPUI) – would mitigate congestion and safety issues.
Loveland Pass (milepost 216): This improvement would provide longer acceleration and deceleration lanes at the Loveland Pass interchange.	This would result in greater capacity and safer merging.
Georgetown (milepost 228): Proposed improvements would signalize the ramps, provide turn bays and build a roundabout at Argentine Street.	Improvements would improve capacity and safety.
Downieville (milepost 234): The north side of the Downieville interchange has two unsignalized intersections within about 50 feet of each other, where the crossroad meets up with the westbound ramps and then the frontage road. The intersections have limited capacity and often cause long queues on the frontage road today. Future traffic is expected to back onto the main I-70 roadway.	This component would provide greater ramp and intersection capacity.
Fall River Road (milepost 238): Minor ramp modifications would be made. Additionally, a spur road would be constructed over Clear Creek to connect the interchange with the frontage road.	Improvements at the Fall River Road interchange would address both safety and capacity issues. Spur road would remove local traffic from I-70 and improve local access.
Hyland Hills and Beaver Brook (mileposts 247 and 248): The Hyland Hills (milepost 247) and Beaver Brook (milepost 248) interchanges would be improved.	Improvements would increase capacity of the ramps and the intersections with local roads (Hyland Hills Road and Bergen Park Road).
Lookout Mountain (milepost 256): This interchange would be rebuilt.	The rebuilt interchange would accommodate future increases in demand.
Morrison (milepost 259): An additional left turn lane would be added at this interchange for eastbound on-ramp traffic.	This would improve performance of intersections under I-70.

Safety Improvements

COMPONENT	BENEFIT
West of Wolcott (milepost 155 to 156): The curve west of the Wolcott interchange is posted	Curve safety modification improves safety.

with advisory speeds as low as 60 mph, when the speed limit on adjacent portions of I-70 is 75 mph. As a result of this violation of driver expectancy, this section has an above-average accident rate.	
Dowd Canyon (milepost 170 to 173): This narrow canyon accommodates the Eagle River, Gore Creek, and I-70. The tight curves here have some of the highest accident rates in the corridor.	Curve safety modification improves safety.

Auxiliary Lanes

COMPONENT	BENEFIT
Eastbound Auxiliary Lane from Frisco to Silverthorne (mileposts 203 to 205):	An auxiliary lane between these two interchanges would increase safety and improve capacity.
Avon to Post Boulevard Eastbound (mileposts 167 to 168): I-70 between Avon (milepost 167) and Post Blvd. (milepost 168) is uphill. Traffic merging from the Avon on-ramp has difficulty accelerating on the grade and finding sufficient gaps for merging. Traffic attempting to get from I-70 to the Post Blvd. off-ramp creates a problematic weaving issue.	An auxiliary lane between these two interchanges would increase safety and improve capacity.
West of Vail Pass Eastbound and Westbound (mileposts 180 to 190): An additional lane in both directions would be built between Vail East Entrance (milepost 180) and the Shrine Pass interchange (milepost 190), just east of the Vail Pass summit.	The eastbound auxiliary lane would provide additional capacity by allowing more space for fast-moving vehicles to pass slow-moving vehicles struggling with the steep grades. The westbound lane would primarily be a safety improvement, reducing the likelihood
Morrison to Chief Hosa Westbound (mileposts 253 to 259): A fourth lane westbound would be provided from the Morrison on-ramp (milepost 259) connecting to the existing fourth (auxiliary) lane, which starts at the Chief Hosa interchange (milepost 253) and exits at the Evergreen Parkway (milepost 252) exit.	The auxiliary lane would provide additional capacity up this steep section with six percent grades and the highest traffic volumes in the Corridor. The low-volume Chief Hosa westbound on-ramp would be rebuilt using a taper configuration.